**Precalculus**

**Notes 9.1**

1. **Sequences**

Definition: An **infinite sequence** is a function whose domain is the set of positive integers. The function values …, are the **terms** of the sequence. If the domain of the function consists of the first *n* positive integers only, the sequence is a **finite sequence.**

**Ex. 1:** Find the first 4 terms of the sequences:

**Ex.2:** Find the first 5 terms of the sequence:

**Ex. 3:** Find the th term of each sequence:

1. 1, 3, 5, 7, …
2. 2, -5, 10, -17, …

**Recursively** defined sequences: need to be given one or more of the first few terms to determine other terms in the sequence. (i.e. Fibonacci number sequence)

1. **Factorial Notation**

If is a positive integer, then factorial is:

Special case:

Note:

**Ex. 4:** List the 1st 5 terms of the sequence given by Beginning with

**Ex. 5:** Evaluate

1. **Summation Notation**

Sum of 1st terms of a sequence is represented by: Where: = index of summation

**Ex. 6: Evaluate**

**Properties of Sums (Index Card)**

Note: is an infinite series.

The sum of any finite sequence is a finite number. The sum of an infinite sequence may approach a finite number.

**Ex. 7:** Find the sum of this infinite sequence

1. **Application: p. 620**
2. **Using your calculator to find finite sums**